Jared F. Miller

Convex Optimization · Nonlinear Systems · Control

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Education

Northeastern University

Boston, MA, USA

Ph.D. in Electrical and Computer Engineering — *Sept. 2018 - Present*

- Communications, Control, and Signal Processing (CCSP)
- Advised by Prof. Mario Sznaier
- Thesis Committee: Mario Sznaier, Octavia Camps, Bahram Shafai, Eduardo Sontag, Didier Henrion (LAAS-CNRS)
- GPA: 4.0 (4.0 Scale)
- Expected Graduation May 2023

M.S. in Electrical and Computer Engineering — *Sept. 2015 - May 2018*

- Communications, Control, and Signal Processing (CCSP)
- GPA: 3.852 (4.0 Scale)

B.S. in Electrical Engineering — *Sept. 2013 - May 2018*

- Minor in Mathematics
- GPA: 3.865 (4.0 Scale)

Research Publications

Journal Papers (published)

1. Jared Miller, Yang Zheng, Mario Sznaier, and Antonis Papachristodoulou. Decomposed structured subsets for semidefinite and sum-of-squares optimization. *Automatica*, 137:110–125, 2022
2. J. Miller, D. Henrion, and M. Sznaier. Peak Estimation Recovery and Safety Analysis. *IEEE Control Systems Letters*, 5(6):1982–1987, 2021
3. Jared Miller, Muhammad Ali Al-Radhawi, and Eduardo Daniel Sontag. Mediating Ribosomal Competition by Splitting Pools. *IEEE Control Systems Letters*, 5(5):1555–1560, 2021

Journal Papers (submitted)

1. Jared Miller and Mario Sznaier. Bounding the Distance to Unsafe Sets with Convex Optimization, 2021. arXiv: 2110.14047

Conference Proceedings (published)

1. Jared Miller, Didier Henrion, Mario Sznaier, and Milan Korda. Peak Estimation for Uncertain and Switched Systems. In *2021 60th IEEE Conference on Decision and Control (CDC)*, pages 3222–3228, 2021 (Outstanding Student Paper Award)
2. J. Miller, R. Singh, and M. Sznaier. MIMO System Identification by Randomized Active-Set Methods. In *2020 59th IEEE Conference on Decision and Control (CDC)*, pages 2246–2251, 2020
3. Jared Miller, Yang Zheng, Mario Sznaier, and Antonis Papachristodoulou. Decomposed Structured Subsets for Semidefinite Optimization. In *2020 21st IFAC World Congress*, 2020
4. Chieh Wu, Jared Miller, Yale Chang, Mario Sznaier, and Jennifer Dy. Solving Interpretable Kernel Dimensionality Reduction. In H. Wallach, H. Larochelle, A. Beygelzimer, F. d'Alché-Buc, E. Fox, and R. Garnett, editors, *Advances in Neural Information Processing Systems*, volume 32, pages 7915–7925. Curran Associates, Inc., 2019 (acceptance rate 21.9%)
5. J. Miller, Y. Zheng, B. Roig-Solvas, M. Sznaier, and A. Papachristodoulou. Chordal Decomposition in Rank Minimized Semidefinite Programs with Applications to Subspace Clustering. In *2019 IEEE 58th Conference on Decision and Control (CDC)*, pages 4916–4921, 2019
6. J. Miller and B. Shafai. A Model of Heave Dynamics for Bagged Air Cushioned Vehicles. In *2019 IEEE Conference on Control Technology and Applications (CCTA)*, pages 976–981, 2019
7. B. Taskazan, J. Miller, U. Inyang-Udoh, O. Camps, and M. Sznaier. Domain Adaptation Based Fault Detection in Label Imbalanced Cyberphysical Systems. In *2019 IEEE Conference on Control Technology and Applications (CCTA)*, pages 142–147, 2019

Conference Proceedings (submitted)

1. Jared Miller, Tianyu Dai, and Mario Sznaier. Data-Driven Superstabilizing Control of Error-in-Variables Discrete-Time Linear Systems, 2022
2. Jared Miller and Mario Sznaier. Bounding the Distance of Closest Approach to Unsafe Sets with Occupation Measures, 2022
3. Filip Bečanović, Jared Miller, Vincent Bonnet, Kosta Jovanović, and Samer Mohammed. Assessing the Quality of a Set of Basis Functions for Inverse Optimal Control via Projection onto Global Minimizers, 2022
4. Jared Miller and Mario Sznaier. Facial input decompositions for robust peak and reachable set estimation under polyhedral uncertainty, 2021. arXiv: 2112.14838

Seminars

1. "Bounding distances to unsafe sets", June 28, 2021, Brainstorming days on measure and polynomial optimization (BrainPOP), LAAS-CNRS.
2. "Data-Driven Peak and Reachability Set Estimation", May 25, 2021, MS112 Methods of Learning Dynamical Systems for Control, SIAM Conference on Dynamical Systems.
3. "Analysis and Control of Time-Delay Systems with Occupation Measures", May 3, 2021, BrainPOP, LAAS-CNRS.
4. "Exploiting Structure in Rank-Constrained and Approximated Semidefinite Programs", December 19, 2019, TISEM Operations Research Seminar, Tilburg University.

Poster Sessions (without Conference Proceedings)

1. "Exploiting SDP Structure Yields Tighter Approximations." April 9, 2020. RISE, Northeastern University (remote).
2. "Exploiting SDP Structure Yields Tighter Approximations." February 24, 2020. IPAM Control, Learning and Optimization workshop, University of California, Los Angeles.
3. "Chordal Decompositions in Rank Minimized SDPs." May 30-31, 2019. Learning for Decision and Control (L4DC), Massachussets Institute of Technology.
4. "Chordal Decompositions in Rank Minimized SDPs." May 10, 2019. New England Machine Learning Day, Northeastern University.
5. "Scattered data interpolation through B-spline wavelets and the Elastic Net." April 14, 2017. RISE, Northeastern University.
6. "A parallelized Python-based Multi-Point Thomson Scattering analysis in NSTX-U." October 29, 2014. 56th Annual APS Plasma Physics Conference, New Orleans.

Experience

Northeastern University — *Boston, MA, USA*
Research Assistant, Robust Systems Lab, Controls Group — *Jul. 2017 - Present*

Laboratory for Analysis and Architecture of Systems (LAAS-CNRS) — *Toulouse, FR*
Chateaubriand Fellow, Decision and Optimization, Methods and Algorithms in Control (MAC) Team — *Jan. 2022 - Present*

Paradigm Hyperloop — *Boston, MA, USA*
Control Theorist, Levitation Group — *Jul. 2017 - Dec. 2017*

ASML Holding — *Veldhoven, NL*
Co-op, Metrology Group — *Mar. 2016 - Aug. 2016*

Advanced Micro Devices (AMD) — *Boxborough, MA, USA*
Co-op, Shader Compiler Group — *Jan. 2015 - Jun. 2015*

Princeton Plasma Physics Laboratory (PPPL) — *Plainsboro Township, NJ, USA*
Intern/Part-time Contractor, Data Visualization Group — *Sep. 2012 - Feb. 2016*

Cornell High Energy Synchrotron Source (CHESS) — *Ithaca, NY, USA*
Summer Intern/Research Assistant — *Jul. 2012 - Aug. 2012*

Honors & Awards

Jan. 2022 **Travel Award (for Toulouse)**, AFOSR FY22 International Student Exchange Program (ISEP) — *Arvada, CO, USA*
Dec. 2021 **Outstanding Student Paper Award**, 2021 60th Conference on Decision and Control — *Austin, TX, USA*
Apr. 2020 **Chateaubriand Fellowship**, Office of Science and Technology, Embassy of France in the USA — *Toulouse, FR*
Feb. 2020 **Hosting**, IPAM: Intersections between Control, Learning and Optimization (UCLA Workshop) — *LA, CA, USA*
Dec. 2019 **Travel Award for Seminar**, TISEM Seminar at Tilburg University — *Tilburg, NL*
Aug. 2019 **Travel Award**, 2019 IEEE Conference on Control Technology and Applications (CCTA) — *Hong Kong*
2013-2018 **Honors Program**, Northeastern University — *Boston, MA, USA*
2015-2018 **Dean's List**, Northeastern University — *Boston, MA, USA*

Skills

Programming Matlab (incl. Simulink), Python, Mathematica, LaTeX, Julia, C/C++
MS Office Word, Excel, PowerPoint, Publisher

Teaching

Northeastern University

Boston, MA, USA

Teaching Assistant

- EECE 7345: Big Data, Sparsity, and Control (Fall 2021)

Professional Organizations

Institute of Electrical and Electronics Engineers (IEEE)

(Graduate) Student Member — *Sept. 2013 - Present*

IEEE Eta Kappa Nu (HKN)

Member — *Sept. 2014 - Present*

Society for Industrial and Applied Mathematics

Member — *Oct. 2019 - Present*

Professional Service

Reviewer

Automatica, IEEE TAC, IEEE L-CSS, L4DC, ROCOND, CDC, Nonlinear Analysis: Hybrid Systems